



*Excellence with Caring*

# Florida Agricultural and Mechanical

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February 28, 2003

Dr. George Cooper  
Deputy Administrator, Partnership  
CSREES/USDA  
Washington, D.C. 20250

Dear Dr. Cooper,

Enclosed please find the FY2002 Annual Report of Accomplishments and Results for Florida A&M University.

This is a joint report for research and extension programs at the University.

If there are any questions regarding this report, please feel free to contact me.

Bobby R. Phills,

*Bobby R. Phills*

Dean and Director  
Land-Grant Programs

BRP/dh

# **FY2002 Annual Report of Accomplishments Results and Impact**

## **Florida A&M University**

Florida Agricultural and Mechanical University, an 1890 Land-Grant Institution, receives Federal research and extension funds under Sections 1444 (1890 Extension) and 1445 (1890 Research) of the National Agriculture Research, Extension, and Teaching Policy Act of 1977 as amended.

Sections 202 and 205 of the Agricultural Research, Extension and Education Reform Act of 1998 requires Florida A&M University to prepare, submit and have an approved 'Plan of Work' (POW) to receive its formula funds for research and extension programs.

To meet the requirements of this congressional legislation, Florida A&M University submitted a joint research and extension POW in 1999 which was approved by CSREES for a period of five years (10/1/99 – 9/30/2004).

Subsequently, two annual reports (FY2000 and 2001) were submitted to CSREES and were approved.

This document reports accomplishments, results and impact of research and extension programs for FY2002 (10/1/01 – 9/30/02).

### **Planned Programs**

The research and extension programs at Florida A&M University jointly planned and implemented several projects in FY2002. Significant progress was made in further integrating teaching, research and extension activities to address the critical issues in food and agricultural sciences in Florida. The refocusing of research and extension programs

continues to strengthen the landgrant mission of the University. The program areas for FY2002 were as follows:

**Goal 1:** An Agricultural Production System that is Highly Competitive in the Global Economy

*Program Area*

1. Statewide Goat Program
2. Viticulture and Small Fruit Production
3. Diversified/Alternative Agriculture

**Goal 2:** A Safe and Secure Food and Fiber System

*Program Area*

4. Herd Health and Food Safety

**Goal 3:** A Healthy, Well-Nourished Population

*Program Area*

5. Nutrition, Diet and Health in Florida

**Goal 4:** Greater Harmony Between Agriculture and the Environment

*Program Area*

6. Water Quality
7. Biological Control

**Goal 5:** Enhance Economic Opportunity and Quality of Life for Americans

*Program Area*

8. Financial Management and Decision Making
9. Community Resource Development
10. Statewide Small Farm Sustainable Development

**Stakeholder Input Process**

During FY2002, stakeholder input was sought and received from multiple sources and at several different levels. These included: small farmers in the state, research and extension clientele, agricultural commodity producers, consumers, environmental groups, private foundations, Florida Department of Agriculture and Consumer Services, county extension workers, and state and federal agencies. On-campus input was received from

faculty, staff and students. The Land-Grant Program Advisory Council continues to provide input for research and extension programs. In FY2001, we reported the formation of advisory committees for research and extension centers in Water Quality, Viticulture and Small Fruit Research, Biological Control and Statewide Goat Program. These committees have been very helpful in addressing the needs within the state and garnering additional support for the centers. Federal agencies such as ARS, APHIS, FS, NRCS, NASS, EPA and others, through collaborative projects, provided resources and input into the planning and implementation of research and extension activities at Florida A&M University.

### **Program Review Process**

There are several mechanisms in place to monitor and review the quality and accountability of the research and extension programs. These are: review of research proposals by internal and external subject matter specialists, annual evaluation of faculty research and extension activities and their impact, presentation of accomplishments and results at various professional meetings, seminars, publications and annual reports.

A comprehensive review of research, extension and teaching programs was conducted by CSREES/USDA in April 2000. One of the major recommendations was to use state matching funds to build a critical mass of faculty in each of the program areas. This has been accomplished and eight new faculty and staff members have been added during the current academic year. The College has recently embarked upon developing a long-term strategic plan. One of the USDA agencies, APHIS, has assigned two staff members who will assist us in developing such a plan by June, 2003.

## **Evaluation of the Successes of Multi and Joint Activities**

The 5-year 'Plan of Work' submitted to CSREES/USDA is a joint plan of work between research and extension. In addition, significant input and interaction take place with the academic program and the program for International Agriculture within the College. One of the major achievements in this area is the establishment of a joint science center with the College of Arts and Sciences. This center is funded through a congressional budget grant of one million dollars to ARS and Florida A&M University. Ten joint projects have been funded under this program. Each project has a faculty member from CESTA, College of Arts and Sciences and ARS. This collaborative effort has developed much interest among faculty from chemistry, physics and biology to work on problems related to food and agricultural sciences.

Our cooperative relationship with the Institute of Food and Agricultural Sciences (IFAS) of the University of Florida is strengthened through the Center for Cooperative Agricultural Programs (CCAP). Currently seven joint projects are funded through CCAP. The major emphasis is on addressing the needs of small farmers.

Recently, we have developed a document entitled, "Opportunities for Collaborative and Cooperative Programs in Research, Extension, Academics and International Programs in the College of Engineering Sciences, Technology and Agriculture at Florida A&M University". This document has been disseminated to our clientele and various agencies and has been well received.

## **Accomplishment Reports**

### **GOAL 1:**

#### **PROGRAM AREA 1 – Statewide Goat Program**

The mission of the Statewide Goat Program is being carried out to meet four key objectives: (1) promote and develop an organized marketing infrastructure (from farm to consumer), (2) develop a superior product and efficient production system, (3) develop economic herd health management practices, and (4) facilitate processing and product development.

Although goat research and extension work is ongoing at Florida A&M University for more than 10 years, it was in 1999 that a statewide program was established to serve the total needs of the clientele. Faculty on the Statewide Goat Program conducted 16 workshops related to goat production and marketing. A total of 433 producers were trained in sustainable goat production practices. The development and dissemination of a herd health survey revealed the practices producers employ to keep their herd healthy. Appropriate herd health recommendations were made to producers. Joint research with the University of Florida and Fort Valley State University to improve management practices and development of value-added products (goat jerky, sausage, etc.) from chevon (goat meat) is underway.

**IMPACT:**

Increased participation of minority producers (138) raising meat goats, adopting improved production and management practices (i.e., record keeping, breeding, herd health and pasture management) and active participation in training activities and educational programs developed for meat goat producers. Forty-five on-farm consultations were done by the faculty in FY2002. One producer group was organized and received education specific to sustainable goat production practices. The group was formed for the purpose of networking and facilitating marketing of goats. Collaborative

efforts with the following organizations were either initiated or continued: New North Florida Cooperative, Heifer Project International, University of Florida, Southern Food System Education Consortium, Southern Rural Development Initiative, Florida Meat Goat Association, Tuskegee University and Fort Valley State University.

## **PROGRAM AREA 2 – Viticulture and Small Fruit Research**

### **ACCOMPLISHMENTS:**

In FY2000, the Center for Viticulture and Small Fruit Research was established to address the needs of Florida's grape and wine industry. One of the major challenges is to develop new and improved grape cultivars for fresh fruit and processed products. Muscadine grape cultivars currently used for fresh fruit are seeded, have thick skin and have a relatively short shelf-life. Research projects are geared toward finding solutions to these problems. The major accomplishments are listed below.

1. The successful transference of the seedless characteristics from vinifera grapes into muscadine grapes. Newly developed seedless hybrids are now under evaluation.
2. Produced 15,000 hybrid seedlings from the breeding program to produce new and improved grape cultivars.
3. Established a disease-free collection of Florida grapes for genetic engineering.
4. Provided 207 extension and outreach services to grape growers and small farmers. In addition, 8 training workshops, 6 site visits, and 14 demonstrations were conducted by the Center faculty and staff.
5. Established a one acre evaluation plot for blackberries. In addition, several small fruits with economic potential were planted to determine their suitability and viability for small farmers. These are: jujuba, pawpaw, plum, blueberries, fig, mayhaw, and kumquat.

### **IMPACT:**

The Center's research and extension activities had a significant impact on the industry. About 45 acres of new vineyards were established in Florida and 3 new wineries came into operation in 2002. There are now 11 wineries in the state and wine production is expected to exceed 250,000 gallons in 2003. The Center has provided training, improved grape cultivars, and germplasm material for breeding to producers. Close collaboration has been established with the Florida Grape Growers Association. The Center received over \$73,500 from Florida Grape Growers Association to fund five research projects.

The site visits, demonstrations and training workshops provided useful technical information to the growers. As a result of these visits, growers from 6 vineyards were able to control the vine dieback disease "Eutypa" that could have caused extensive losses. The workshops and field demonstration conducted by the Center helped many growers to be more efficient producers and attracted new growers.

### **PROGRAM AREA 3 – Diversified/Alternative Agriculture**

#### **ACCOMPLISHMENTS:**

Florida A&M University Research and Extension Programs have been working in collaboration with various public and private entities to address the marketing problems facing small and limited resource farmers. Opportunities have been developed with rural and urban school districts in Florida, Georgia, Alabama, Mississippi and Arkansas. Market trials and full-year deliveries, in collaboration with the New North Florida Cooperative, were conducted with such products as leafy greens, muscadines, peas and beans, and sweet potatoes. Eleven producer groups and cooperatives, serving over 100 farmers, have participated in program activities.

Demonstration plots to test the adaptability and market potential of alternative tropical crops such as pigeon pea and Habanero peppers were established. Within the state of Florida 27 small farmers and 3 cooperatives are currently enrolled to receive information and training to produce these alternative crops.

**IMPACT:**

- Small and limited resource farmers have provided over 60,000 pounds of fresh agricultural produce to 20 school districts serving over 550,000 children in Florida, Georgia, Alabama, Mississippi and Arkansas
- Four minority producer groups/cooperatives have received funding for marketing and agricultural production, transportation and distribution
- Twenty-seven small farmers are currently involved in hot pepper production. One farmer engaged in containerized hot pepper production realized gross returns in excess of \$15,000 from 3,600 plants after only 9 weeks of harvesting.

**PROGRAM AREA 4 – Herd Health and Food Safety**

**ACCOMPLISHMENTS:**

Herd Health and Food Safety are two of the most important areas in managing food products from animals. They impact cost efficiency, health and consumer satisfaction. Herd management practices also play a major role in preventing and reducing the incidence of foodborne illness. Cooperative extension has worked with the area state veterinarians and the State Department of Agriculture, Division of Animal Industry in training food handlers. Food safety workshops for processors led to 15 processors becoming HACCP (Hazard Analysis Critical Control Point Program) certified and able to implement a HACCP program in their establishments. This certification allowed them to meet requirements of USDA. Workshops for producers led to 15 producers implementing a science based herd health program leading to individual animal identification, record keeping, and practicing sound antibiotic control. Twelve producers

were given on-farm training which led to the implementation of a year-round herd health management program.

**IMPACT:**

- Participants in HACCP based herd health workshops were able to apply at least four of the seven HACCP based principles, as well as identify and implement five good agricultural practices.
- Distribution of an extension publication entitled 'Herd Health for Cattle' is being used throughout North Florida to aid in food safety education of processors, producers and consumers.

**PROGRAM AREA 5 – Nutrition, Diet and Health in Florida**

**ACCOMPLISHMENTS:**

The rapid increase in the number of elders (senior citizens) in our communities and the decisions that have to be made about the cost and quality of care as they age at home or in institutional settings are of great concern to them as well as family members. To assess the role of elder care services (ECS) with regards to nutritional health of the elderly residing in Leon County, Florida, participants at 6 congregate meal sites were screened with a modified Nutrition Screening Initiative checklist. Nutritional risk scores for the total of 324 subjects were as follows: 46% in the moderate nutritional risk category, 31% in the high nutritional risk category and only 23% in the low nutritional risk category. Significant associative factors were perception of health, regularity of medical and health professional visits, gender, race, and fluid intake. In addition to elderly health care, the prevalence of overweight among all age groups has been of major concern.

A basic nutrition program consisting of information on how to use the Food Guide Pyramid and the Dietary Guidelines was conducted by extension personnel. Over

1000 adults and youth were reached with this information. Two diabetes education seminars were conducted by the state specialists with a total attendance of fifty-eight (58) individuals.

Florida A&M University personnel, in collaboration with other community agencies in a three county area in north Florida presented a Health Fair. Over 600 persons attended the health fair where they received health information, health screenings, and sampled healthy foods.

**IMPACT:**

As a result of attending the Health Fair in a tri-county area, five individuals were hospitalized with high blood sugars and associated problems. Approximately 78 percent of the participants at the nutrition seminars were able to identify the different food groups and identify some common foods that belong in each group.

**PROGRAM AREA 6 – Water Quality**

**ACCOMPLISHMENTS:**

Farm production and homeowner activities continue to pose potential pollution sources for chemical impairment of water resources in Florida. To address this issue, Florida A&M University's research and extension programs embarked on a mission to provide information to limited resource farmers and rural residents through a mobile drinking water laboratory. The training sessions provided hands-on activities that were geared towards improving the awareness to the rural populace about water quality. Water quality and environmental education was provided to some 3,000 limited resource clients in Jackson County, Florida, a highly vulnerable ground watering area.

Recently completed best management practices research with three crops – corn, tomatoes and cotton – has shown that certain fertilizer and cultivation practices can maintain crop yields while reducing excessive application of fertilizers.

Phosphorus has been identified as a major nutrient impacting many aquatic ecosystems of Florida. Economical and effective means to remove phosphorus from wastewater are being investigated. Constructed wetlands are a low-cost natural alternative to remove excess phosphorus from surface water. Currently we have identified gypsum and crushed concrete block as a potential bedding material to filter out P in wastewater.

Biomonitoring is a well recognized method of water quality assessment. We have used 5 major groups of aquatic insects that are water pollution sensitive. Three three-day workshops were conducted to train water pollution and conservation biologists to identify and monitor these insect groups.

**IMPACT:**

The deployment of a mobile drinking water laboratory enabled us to gain access to 252 homesteads and 2,128 rural residents. One of the major advantages of this was to provide residents with “on the spot” results about the status of their wells and drinking water supply. The testing included nitrate-nitrogen, pH and coliform bacteria.

The ‘Best Management Practices’ (BMPs) have major implications for reducing water pollutants. BMPs developed included use of cover crops to prevent nitrate leaching and accumulation in root zone or below.

Our taxonomic manuals/books and related publications on aquatic insects have become important resources for water pollution and environmental biologists throughout

Florida and neighboring states. The workshops trained 75 personnel in biomonitoring of water quality.

### **PROGRAM AREA 7 – Biological Control**

#### **ACCOMPLISHMENTS:**

The importance of weevils as both beneficial and pest species has been clearly demonstrated. Our research identifying weevils has assisted in the control of aquatic weeds, Hydrilla, Melaleuca, Salvinia, water hyacinth, and other introduced weeds, as well as the control of pest species such as the citrus root weevils, Diaprepes and Pachneus. An expert/information system developed by our program is being used by USDA, the Army Corps of Engineers, and port inspectors.

#### **IMPACT:**

The exact economic impact of this research is difficult to determine, however the cost to the state of Florida for the control of the water hyacinth weevils is more than \$20 million per year and the cost of Melaleuca is estimated at \$168 million per year. The cost of controlling citrus weevil is approximately \$375 million per year. The states of Florida, Texas and California are areas of primary importance due to the extensive groves of citrus grown in each of these areas. Two introductions into glasshouse situations indicate that weevils have the potential to become serious pests in many parts of the U.S.

### **PROGRAM AREA 8 – Financial Management and Decision Making**

#### **ACCOMPLISHMENTS:**

Florida, like many other states, counts among its residents families called the working poor – those who work but often fail to make ends meet. In addition to this group of working poor, there are those who have traditionally found some financial

assistance in social service programs can no longer count on these programs for assistance. To address this problem, state specialists conducted three credit management seminars. A total of 250 people attended these seminars. These seminars were designed to teach participants the importance of personal financial goals, developing spending plans, and credit management. Gadsden County Extension staff conducted four seminars for the first time homebuyers program. Of the 138 individuals registering for the seminars, 98 completed the seminars.

**IMPACT:**

As a result of attending the credit education seminars, five (5) individuals with excessive debt loads sought help by contacting the Consumer Credit Counseling Service. Fifteen (15) community residents used a personal budget sheet to keep spending under control.

Fifty-one (51) individuals receiving certificates of completion for the first time homebuyers program became eligible for a homebuyer's loan. Twenty-one (21) participants in the homebuyers program purchased new homes and others are still working on their credit.

**PROGRAM AREA 9 – Community Resource Development Program**

**ACCOMPLISHMENTS:**

The community Resource Development (CRD) Program has provided technical assistance to individuals in the form of developing business plans, marketing plans, financial statements, and/or loan packaging as a means of promoting economic development. The program staff has worked with individuals to develop start-up businesses and expand existing businesses in Leon and surrounding counties. The CRD

Program has also developed collaborative partnership and/or working relationship with entities to address the needs of minority and underserved clientele. Partners include the FAMU Small Business Development Center, the FAMU Community Development Corporation, the Frenchtown Revitalization Council, the Mt. Olive Housing & Community Development Corporation, the Washington Improvement Group of Gulf County, and the Jackson County Development Council, Inc., and others. The objective of these collaborations and partnerships are to assist community residents in establishing successful businesses in Leon and surrounding rural counties.

**IMPACT:**

One hundred and thirty-five (135) persons attended workshops or conferences where they received information concerning starting and managing a business, preparing a business plan, small business loan opportunities and/or coalition building. Twenty (20) individuals actually requested and received one-on-one assistance with developing business plans, preparing financial statements and/or preparing loan packages of which ten (10) actually submitted loan packages for funding of a new business. As a result of this at least eleven (11) jobs were created.

**PROGRAM AREA 10 – Statewide Small Farm Sustainable Development Program**

**ACCOMPLISHMENTS:**

In year 2001, the FAMU Cooperative Extension Program implemented a multidisciplinary, education, training, and development program to assist and equip underserved farming populations, farm workers and their families. The series of participant-oriented education and hands-on training series focused on organic and alternative agricultural systems strategies, how-to develop value-added meat and plant

products, environmental impacts, farm workers' needs and sustainable living, and quality of life.

**IMPACT:**

More than 600 people participated in the sustainable development sessions. A total of 19 participant-oriented grassroots sustainable development sessions were held. Comments received from participants indicated that these sessions were highly beneficial to them in learning and implementing practices involved in sustainable development of small-farm operations.

**Summary Table  
Expenditures of Federal Funds  
By Goals**

**Florida A&M University  
FY2002**

	<b>Research</b>	<b>Extension</b>
<b>Goal 1</b>	\$200,143	\$334,939
<b>Goal 2</b>	\$158,569	\$247,418
<b>Goal 3</b>	\$173,816	\$268,610
<b>Goal 4</b>	\$853,892	\$192,648
<b>Goal 5</b>	-0-	\$289,872
<b>Total</b>	<b>\$1,386,420</b>	<b>\$1,333,487</b>

**Grand Total of Research and Extension Funds Spent            \$2,719,907**

## **Addendum to the Current ‘Five-Year Plan of Work’**

Florida A&M University would like to add the following program areas to the current POW. These program areas were developed in response to the clientele needs and stakeholder input.

### **GOAL 2:**

#### **PROGRAM AREA - Enhanced Food Processing**

The consumption of processed foods especially fruit juices, jams and jellies has grown significantly during the recent years. From 1995 to 1999, the food processing and consumption of beverages increased by 22%. However, current indications are that the soft drink market may have peaked and the categories showing the greatest growth are mineral or spring water, energy drinks and wellness products. These beverages have achieved spectacular growth due to the overwhelming interest of consumers to obtain health benefits from such products.

Muscadine grapes, a crop indigenous to Florida, are a rich source of many bioactive compounds important from a health point of view. The grape is known to have a most distinctive taste and has been used to make a number of food products including juices, jams and jellies. However, there is not any significant body of information on processing of muscadine products. Therefore, research efforts will be directed to:

1. Produce muscadine products with sensory characteristics acceptable to the consumer.
2. Measure the effect of processing techniques on some of the bioactive compounds in muscadine products.
3. Identify key parameters governing performance properties of muscadine products.

## **Methodology**

This research aims to utilize the muscadine grape as the principal raw material source but other small fruit crops may also be investigated. The processing includes:

- i. Selecting and cleaning of raw materials
- ii. Production of juice or other products
- iii. Blending of the product
- iv. Processing steps
- v. Packaging
- vi. Raw and finished product analysis (physical, sensory, chemical and microbiological)

## **Collaboration**

This project will enhance cooperation between several units within the College: Food Science, Biological and Agricultural Systems Engineering, the Viticulture Program, Manufacturing Engineering Technology and the Horticulture Program. Cooperative Extension and Outreach Program will help in disseminating information on processing to appropriate clientele.

## **Significant Outcomes**

- i. A wholesome enhanced beverage and other products from muscadine grapes are produced.
- ii. Critical parameters of the manufacturing process are identified.
- iii. Other value-added products are developed

## **GOAL 5:**

### **PROGRAM AREA - Agro-Informatics**

Agricultural Research and Cooperative Extension Programs have served small farmers for quite sometime. Most of these programs have focused on specific needs of the small farmer including productivity, quality, farming techniques and training. However, one major need still exists, access to competitive information and markets. We propose to build an Agro-Informatics platform to address this issue. This system will be

designed around an expert, interactive Internet based platform. It will compile information databases containing subject matter of specific interest to the small farmer.

### **Methodology**

A consortium of small farmers in six north Florida counties will comprise the core group. The system will be designed to provide the farmers with a communication and discussion forum. Links will be developed for easy access to farm equipment and material suppliers, product distributors, customer and credit information and USDA and state agencies. Overall goal is to provide small farmers a central easily accessible tool that can compliment their current operations and provide the capability for expanding and improving the performance of their farms.

### **Significant Outcomes**

- i. Improved marketing methods, crop selection, distribution and sales
- ii. Improved methods for product transportation
- iii. Improved harvesting and storage methods
- iv. Better crop rotation, irrigation, chemical treatment and product quality
- v. Higher economic returns for small farmers